

**BASIS FOR THE AMENDMENT**

Claims 27 and 28 have been amended as supported at page 4, line 19 of the specification. Their limitations have been included in Claims 10 and 17.

Claims 10, 11, 17 and 18 have been further amended as supported at page 3, lines 18-22 of the specification and by Examples 5 and 6.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 1, 4, 5, 10-12, 14-19 and 22-28 will now be active in this application.

**INTERVIEW SUMMARY**

Applicants wish to thank Examiner Nguyen for the helpful and courteous discussion with Applicants' Representative on October 10, 2007. During this discussion it was noted that EP 0937755 and Türk et al, alone or in combination, fail to disclose or suggest a precipitated silica having a **Sears number greater than 25 ml/5g** or a process as claimed in Claims 10 and 17. Also, the claims as amended were discussed and it was noted that “simultaneously metering into a vessel an aqueous silicate solution and a Lewis and/or Brønsted acid over a period of 40 to 65 minutes to provide a mixture having a solid content of the suspension of from 79.3 to 104 g/l,” of Claims 10 and 17 are not disclosed in EP 0937755 and Türk et al, alone or in combination.

**REMARKS**

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks.

The present invention as set forth in **amended Claim 1** relates to a precipitated silica having a DBP absorption of from 100 to 450 g/100 g, a choline chloride absorption of from 150 to 400 g/100 g (75% absorption by weight aqueous solution); a DBP/choline chloride absorption of less than 1.07 and a **Sears number greater than 25 ml/5g**.

**Claim 10** relates to a process for preparing precipitated silica having the above properties (including **Sears number greater than 25 ml/5g**), comprising, inter alia, simultaneously metering into a vessel an aqueous silicate solution and a Lewis and/or Brønsted acid over a period of 40 to 65 minutes to provide a mixture having a solid content of the suspension of from 79.3 to 104 g/l,

**wherein the metered addition of the aqueous silicate solution and the Lewis and/or Brønsted acid is carried out while maintaining a constant alkali number in the mixture of at least 15.**

**Claim 17** relates to a process for preparing precipitated silica having the above properties (including **Sears number greater than 25 ml/5g**), comprising, inter alia, simultaneously metering into a vessel an aqueous silicate solution and a Lewis and/or Brønsted acid to provide a mixture, **wherein the metered addition of the aqueous silicate solution and the Lewis and/or Brønsted acid is carried out while maintaining a constant alkali number in the mixture of at least 15.**

Regarding the previously submitted Rule 132 Declaration, the Examiner argues that a 10 % difference in Sears number is within the margin of error. The Examiner's position is not

correct. Applicants submit herewith a **new Rule 132 Declaration** showing that the **margin of error is +/- 0.25 ml/5g.**

**Accordingly, the Sears numbers in EP'755 are significantly lower than the Sears number of the present invention, namely by at least 10%.** Türk et al are silent regarding the Sears number.

Regarding **Claims 10 and 17**, EP 0937755 (EP'755) and Türk et al (US'379) fail to disclose or suggest a process for preparing precipitated silica having the above properties (including **Sears number greater than 25 ml/5g**), comprising, inter alia, simultaneously metering into a vessel an aqueous silicate solution and a Lewis and/or Brønsted acid over a period of 40 to 65 minutes to provide a mixture having a solid content of the suspension of from 79.3 to 104 g/l,

**wherein the metered addition of the aqueous silicate solution and the Lewis and/or Brønsted acid is carried out while maintaining a constant alkali number in the mixture of at least 15.**

EP 0937755 (EP'755) and Türk et al (US'379), alone or in combination, fail to disclose or suggest a precipitated silica and processes as claimed.

There is no disclosure or suggestion in EP'755 of a **Sears number greater than 25 ml/5g**. In fact, Applicants have measured the Sears numbers of an original sample of Product A Experiment 6 (see Table 9 of EP'755) and found a value of **19,9 ml/5g**. (See Rule 132 Declaration filed May 7, 2007.) In addition the Sears number of an original sample of Product C Experiment 13 (see Table 9 of EP'755) was measured and found to be **22,6 ml/5g**. Thus the Sears numbers of EP'755 are at least 10% below the Sears numbers as now claimed

in Claim 1 of the present invention. Thus, the Examiner's statement that EP'755 has the same Sears number as the present invention is incorrect.

Neither EP'755 nor Türk teaches how to increase the Sears number above 25 ml/5g while simultaneously keeping the DBP/CC ratio below 1.07. Thus, starting with example C13 of EP'755 as closest prior art it would not have been obvious to make silica as now claimed in claim 1 of the present invention.

On page 7, last paragraph the Examiner states that Türk '369 discloses "*at high alkaline numbers, i.e. 40, the DBP value is at 310.7 g/100g which would be still in the claimed range*". However, Claim 1 of the present invention claims a combination of 6 parameters (BET, DBP, CC-absorption, CTAB, DBP/CC, Sears number).

Claim 1 of the present invention requires that all 6 parameters are fulfilled simultaneously. Example 19 of Türk teaches, that increasing the alkaline number would lead to an increase of the DBP.

The question is what would be the consequence if the teaching of Türk is applied to the teaching of EP '755 ? Example C13 of EP'755 exhibits DBP = 216 g/100g, CC-absorption = 205 g/100g and DBP/CC = 1,05 while the alkaline number = 7. According to Türk an increase of the alkaline number would cause that the DBP of example C13 of EP '755 would increase. Assuming only a minimal increase of the DBP from 216 g/100g to 220 g/100g, this would cause that the ratio DBP/CC-absorption of example C13 of EP '755 would increase to 1,073 which would be out of the claimed range of the present invention. Türk, however, teaches that the increase of the DBP would be higher than 4 g/100g. Thus, a person of ordinary skill in the art starting with example C13 of EP'755 would not consider

increasing the alkaline number because Türk teaches that this would cause a shift of the DBP/CC ratio out of the target range.

The Examiner is mistaken in only considering the effect of the alkaline number to the DBP parameter while disregarding the effect on the DBP/CC ratio. The essential question how the influence of an increased alkaline number to the DBP/CC ratio would be has not been discussed by the Examiner.

Since EP'755 does not teach to increase the alkaline number and Türk teaches that an increase of the alkaline number increases the DBP and the DBP/CC ratio, the answer would be that it would not have been obvious to increase the alkaline number. Starting with example 13 of EP'755 a person of ordinary skill in the art would not have increased the alkaline number, since there would not have been a reasonable expectation of success to achieve the target range for DBP/CC ratio and Sears number.

The examiner continues to object that Applicants are not evaluating EP '755 fully in the arguments pertaining only to the examples of EP '755. In this regard Applicants have the following comments:

- EP '755 teaches merely a special drying method (see Paragraphs 7 and 13 to 20)
- As regards precipitation of the silicas, EP '755 refers to methods described in older patents. It explicitly mentions DE 1467019 (Paragraph 12 and product A), DE3144299 (product B) and DE 19526476 (product C). The entire teaching from EP '755 therefore consists of

- Precipitation according to DE 1467019 + drying according to EP '755,
- Precipitation according to DE 3144299 + drying according to EP '755,
- Precipitation according to DE 19526476 + drying according to EP '755.

The question now becomes, what disclosure content do DE 1467019, DE 3144299 and DE 19526476 have with regard to precipitation.

Further, the Sears number was increased in the present invention, for example, as disclosed at page 2, lines 17 to 20 of the specification, where it is explicitly pointed out that the silanol group density = Sears number is determined by the alkali number [AN], or in other words by the variation of pH/AN during precipitation. As regards the examiner's objection, it must therefore be examined whether the patents cited in EP '755 permit any variances in relationship to the pH variation during the precipitation process.

DE 1467019 discloses precipitation at constant pH, wherein the pH must be maintained constant in the range of 10 to 12 (see DE '019, page 5, 4<sup>th</sup> paragraph). This permissible variation range of 2 pH units ( $11 \pm 1$ ) disclosed in DE '167 corresponds to the range that must often be maintained in practice during large-scale industrial tests (see also EP '755, Example 1), and it means nothing other than that the pH must be constant at 11. Thus the disclosure content of DE '019 does not go beyond that of Example 1 of EP '755. The statement made concerning Example 1 of EP '755 is therefore representative of the total disclosure of the precipitation according to DE 1467019 + drying according to EP '755.

On page 9, lines 1 to 17, DE 3144299 discloses a method in which the pH must be maintained constant at 6 to 7 and the solids content must always be exactly 46 g/L. Thus DE

'299 does not permit any variation whatsoever of pH and solids content. The disclosure content of the precipitation according to DE 3144299 + drying according to EP '755 therefore does not go beyond the already discussed Example 2 of EP '755, even if the entire document is considered.

In the general description of the method of DE 19526476 (p. 2, lines 41 to 53), it is disclosed that the alkali number must always be  $7 \pm 1$ . Thus DE '476 does not permit any variation whatsoever of the alkali number. Thus the disclosure content of the precipitation according to DE 19526476 + drying according to EP '755 also does not go beyond that of Example 3 of EP '755.

In summary, even considering the complete teaching of the manufacturing process disclosed in EP '755 in combination with those in the references DE 1467019, DE 3144299 and DE 19526476, or in other words the complete teaching of all patents, it is found that there is no teaching by which a Sears number of  $> 25$  could be achieved. This is due to the fact that the Sears number, or in other words the number of silanol groups on the silica surface, is determined by the variation of pH/AN during precipitation, whereas all manufacturing processes disclosed in EP '755 in combination with those disclosed in the patents cited therein are incapable of any variation whatsoever of the pH values or alkali numbers. Thus the examiner's objection that Applicants have compared only the examples in their arguments is not correct, since the total disclosure content of EP '755 as regards the Sears number is, as demonstrated, no more than what appears in the examples.

Incidentally, it is noted that the detailed analysis of the references presented above also contradicts the examiner's assertion that it would have been obvious to increase the



alkali number. **All manufacturing processes disclosed in the cited patents teach precisely the opposite, namely not changing the pH and the alkali number.**

Further, as already explained above, the alkali number determines the silanol group density. For more information see page 3, lines 5 to 16 of the present application.

Accordingly, a different pH/AN variation causes different contents of alkali ions to be incorporated in the silica. In other words, either many Si-OH groups (silanol groups) or many SiO-alkali groups are present in the silica. As more H atoms are replaced by alkali atoms, the silanol group density, or in other words the Sears number, becomes lower. According to page 3 lines 14 to 16 of the present application, the precipitation time also has an influence in this regard.

Further, the Sears number may be influenced by factors like temperature, precipitation time and especially pH (in the current invention very high due to high alkalinity) and speed (in the current invention: very high) are of major importance - among others. Therefore, only the very same precipitation recipes may lead to the similar sear number.

Regarding the newly added limitations in Claims 10 and 17, the stability of the alkaline number guarantees the unique features of the silica described - as the stable alkalinity influences the surface properties /size of the smallest silica particles (primary particles) and thus defining the final macroscopic parameters like BET (direct impact), DBP (they way the primary particles aggregate, how the aggregates agglomerate due to the OH-groups (OH-group density = Sears number)), ... . Moreover, the precipitation ends with a pH of about 3-4 after the acidification, therefore it is important (before acidification) to keep the alkaline number constant.

Finally, besides the high productivity (and unique, so far) gained via claimed high solid content (in a short time): e.g. high DBP with lower BET can be obtained; it simply is the way how those silicas can be made.

Therefore, the rejection of Claims 10, 17, 22-25 under 35 U.S.C. § 102(b) as being unpatentable over EP 0937755, the rejection of Claims 1, 4-5, 10, 13-17, 22-28 under 35 U.S.C. § 103(a) as being unpatentable over EP 0937755 and the rejection of Claims 1, 4-5, 10-12, 14-19 and 22-28 under 35 U.S.C. § 103(a) as being unpatentable over EP 0937755 in view of Türk et al are believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of these rejections is respectfully requested.

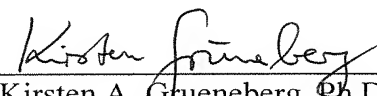
This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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